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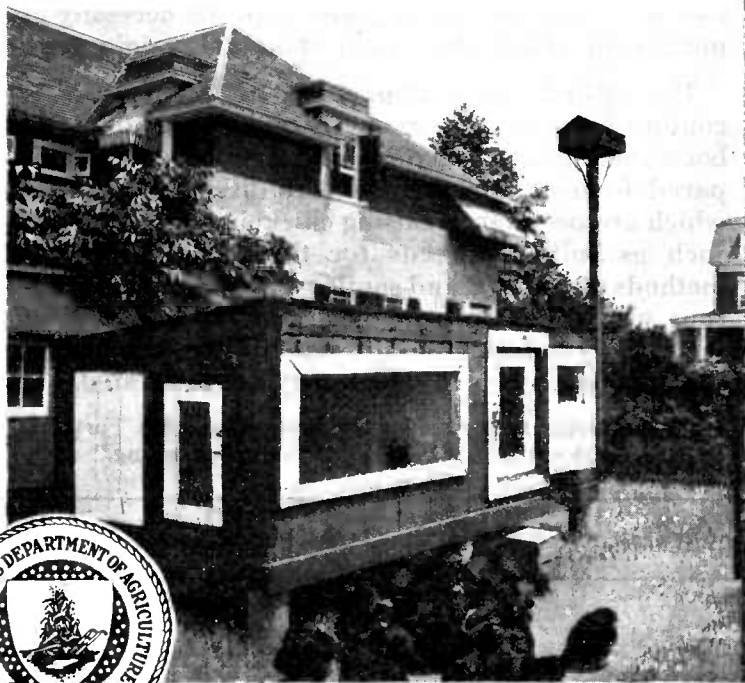
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# U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 1508

## POULTRY KEEPING IN BACK YARDS



**R**ELATIVELY small size and adaptability to a variety of conditions, give poultry an important place in the back yards of city and town residents.

In nearly every household there are table scraps and material from the kitchen which have feeding value, but which, if not utilized, find their way into the garbage pail. Poultry is the only class of domestic animals that is suitable for converting this waste material, right where it is produced, into wholesome and nutritious food.

By keeping a back-yard poultry flock, the family not only reduces the cost of living but is supplied with eggs and poultry meat of a quality and freshness often difficult to obtain. The eggs, which are rich in vitamins, also dispense with the necessity of purchasing much other food of animal origin.

The United States Department of Agriculture is continually receiving requests for information on back-yard poultry keeping, and this bulletin is prepared to meet the demand. It discusses features which are peculiar to raising chickens in back yards, such as suitable breeds for the purpose, houses, methods of feeding, and sanitary requirements. Persons who desire information on other branches of the poultry industry should write to the department, stating the subjects in which they are interested.

This bulletin is a revision of and supersedes Farmers' Bulletin 1331 entitled, "Back-Yard Poultry Keeping."

# POULTRY KEEPING IN BACK YARDS

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## PURPOSE OF A BACK-YARD FLOCK

**T**HE BUSINESS of poultry keeping is an enterprise engaging the attention of many thousands of city residents. A flock of

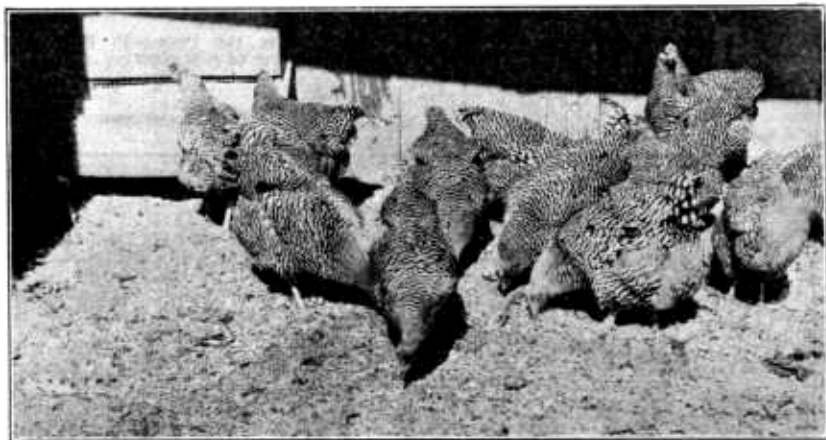


FIG. 1.—Flock of Barred Plymouth Rock laying hens scratching for their grain. This gives the necessary exercise to keep the hens in good condition. The feed hopper hung up in the left-hand corner of the pen is kept filled with dry mash. The Plymouth Rock is a popular breed for back-yard flocks

chickens may be kept in a back yard primarily for the production of eggs, or it may be standard bred for exhibition purposes. There are also many cases where a back-yard flock combines both purposes. (Figs. 1, 2, and 3.)

The keeping of fowls primarily for egg production serves a good purpose in utilizing various kinds of food which would otherwise be wasted. Also, the back-yard flock should provide the table with fresh eggs throughout most of the year and occasionally furnish a chicken dinner.

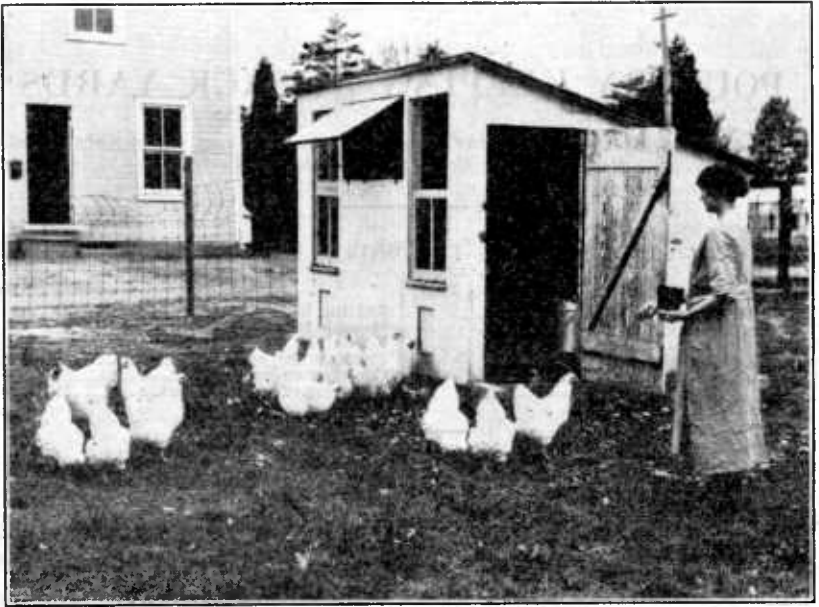


FIG. 2.—A back-yard flock of White Wyandottes. Like the Plymouth Rock, the Wyandotte is also a general-purpose breed adapted for egg production and table poultry purposes



FIG. 3.—A flock of Single-Comb White Leghorns is good for egg production, but they are more apt to fly over fences than the heavier breeds

The breeding of birds to certain standards constitutes an interesting and instructive hobby, and the development of color pattern, particular type, and other features of a certain breed or variety gives a better understanding of the fundamental laws which govern the development of animal life.

In some cities and towns there are ordinances against keeping chickens within the corporate limits. In other places ordinances prohibit the keeping of male birds, because of early morning crowing. In the latter case no breeding work can be carried on, although laying hens can be kept for egg production and capons may be raised for the production of meat. Females of standard breeds also can be kept and fitted for exhibition. The best laying or the best exhibition birds may be kept over until they are 2 or 3 years old, and as the poorer ones are culled each year new stock can be purchased. Where good egg production is the primary consideration, it should be borne in mind that ordinarily birds in the first year of production lay better than when they get older, and after the third laying year annual production usually decreases considerably.

#### THE BREED TO KEEP

The breed to keep in a back yard depends largely upon the personal inclinations of the person concerned as well as the object in view. If interest lies particularly in obtaining good egg production, one of the so-called general-purpose fowls may be chosen. If, on the other hand, one is interested in keeping a small flock for exhibition purposes, then some breed noted for its ornamental qualities may well be selected. Whatever the object in view, the members of the flock should all be purebred. A flock of purebred birds not only is more uniform in general appearance, including type and color markings, but also in respect to meat and eggs produced, and makes a much more interesting unit to work with than a mongrel flock.

When a back-yard flock is kept primarily for egg or meat production one of the more common breeds and varieties of chickens is suitable. These breeds include the Plymouth Rocks, Rhode Island Reds (fig. 4), Wyandottes, Orpingtons (fig. 5), Leghorns, Anconas, Minorcas, Brahmas (fig. 6), Jersey Black Giants (fig. 7), and others. The first four breeds are popularly known as the general-purpose breeds and are especially suitable for back yards. If bred for egg production they lay well and also make good table poultry. The next three breeds belong to the Mediterranean class, and while they are usually good egg layers they have a tendency to fly over the fence more frequently than the heavier breeds. The last two breeds mentioned are large, so-called meat breeds.

Many standard breeds and varieties possess unique characteristics which make their breeding a very interesting problem. There are several breeds and varieties of bantams, for instance, that possess beauty of shape or feather markings, or both. The Rose-Comb Black Bantam (fig. 8), when bred as near to the ideal shape as possible, is a bird with a beautiful outline and one widely admired. The Silver Sebright and Game Bantams have beautiful color markings that make their breeding a fascinating problem. The Cochin

and other bantams also have unique characteristics that appeal to the fancy of many people.

Among the numerous breeds and varieties of the larger fowls some possess ornamental qualities of a high order. The Silver Spangled Hamburg (fig. 9) is noted for its striking color pattern of black and white. The White-Crested Black Polish (fig. 11) is another bird in black and white—a solid-black body with a pure white crest. The Silver Duckwing Game (fig. 10), with the stately

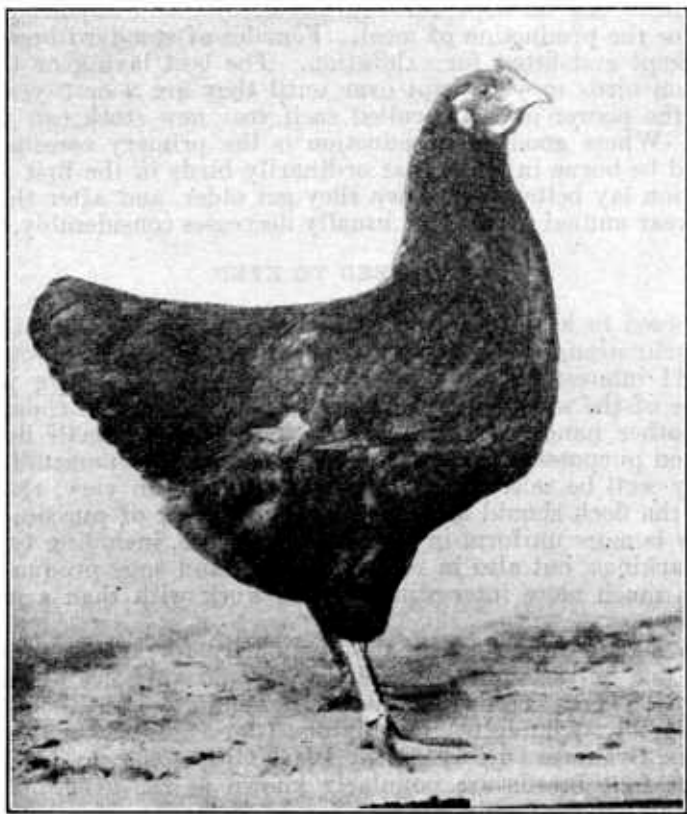


FIG. 4.—Single-Comb Rhode Island Red, female. This is another popular general-purpose breed suitable for egg and meat production

carriage characteristic of all games, has a very pretty but different color pattern in both male and female.

Brief descriptions of these and many other breeds and varieties, kept for both utility and the pleasure of raising them, may be obtained on application to the department.

#### MAKING A START

A start may be made in back-yard poultry keeping by purchasing hatching eggs, day-old chicks, or well-developed pullets and cockerels. Ordinarily the latter method is preferred because it is not always

convenient for the city dweller to hatch eggs or raise chicks. Adult birds may be purchased in the fall of the year, although care should be taken to place the order early, any time from July to September, in order that a good selection of birds may be obtained. If one desires to purchase hatching eggs, then the order should be placed during the winter or early in the spring, to make sure of hatching the chicks early in the season. Also, if one intends to buy day-old chicks, they should be ordered early so that the chicks may be delivered in March or April. Late-hatched chicks rarely, if ever,

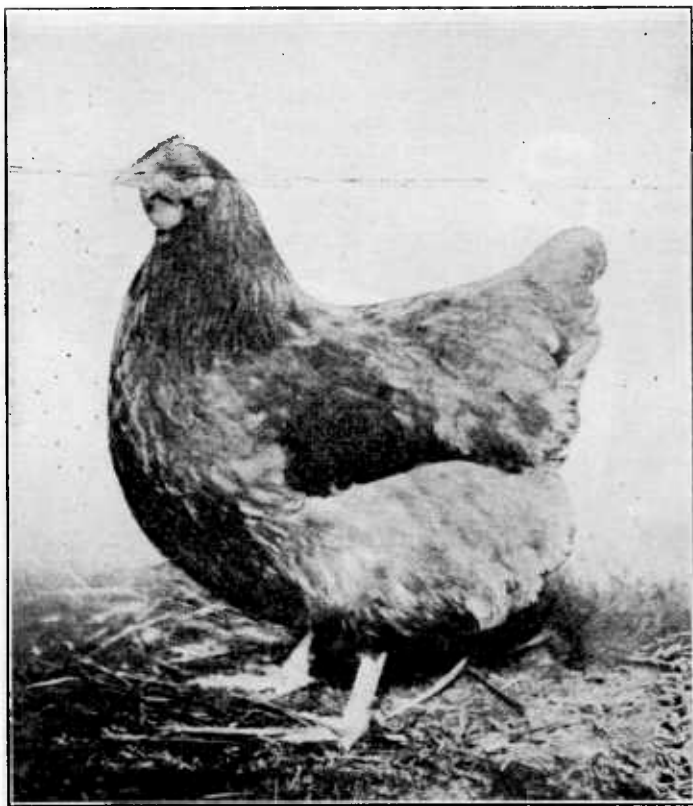


FIG. 5.—Buff Orpington, female, representing a general-purpose breed, but with white skin, whereas the Plymouth Rock, Rhode Island Red, and Wyandotte have yellow skins

do so well as the early hatched ones. Whether hatching eggs, day-old chicks, or adult birds are to be purchased, it is advisable to obtain them from a reliable breeder who is known to have healthy stock of high quality. Success in back-yard poultry keeping is determined to a very large extent by the quality of the original stock.

From 6 to 12 birds should be sufficient to provide the average family with a liberal supply of eggs for most of the year. When it is possible to sell eggs to neighbors—which is done in many cases—20 or more birds may be kept to advantage. If the birds are intended for exhibition purposes, then the number will be governed



largely by the facilities for keeping them properly and the amount of time one cares to devote to them. In any case, however, it is never wise to try to keep too many birds. Crowding them in the houses and keeping too many on a limited area are objectionable features which have often caused failure.

#### SELECTION OF BREEDING STOCK

To be successful in raising chickens it is necessary to have healthy and vigorous breeding stock. Lack of vigor in the newly hatched

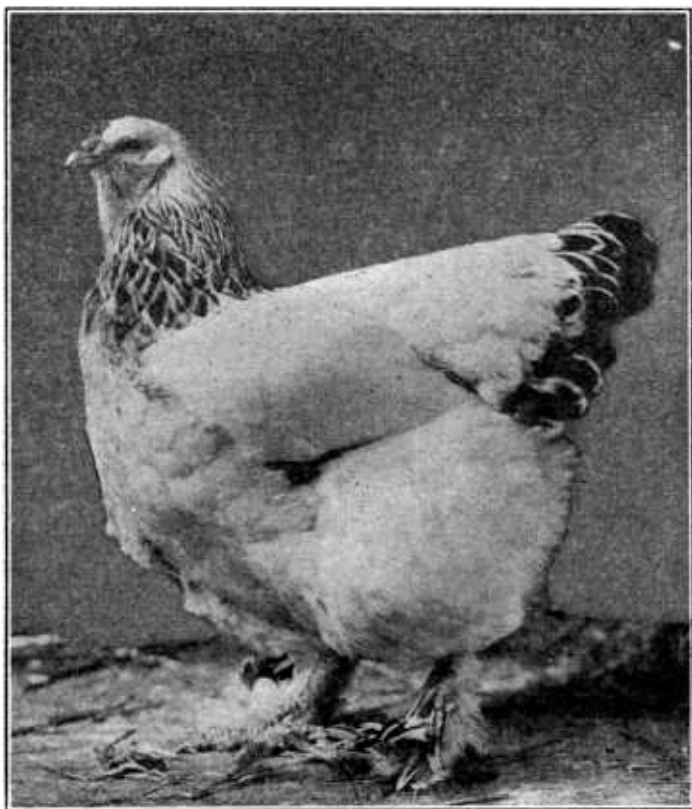


FIG. 6.—Light Brahma, female. This popular breed is well suited for the production of table poultry

chicks is often traceable to weak parents. Only the most vigorous and the best-grown birds should be used for breeding. Each bird should be full of life and energy and free from any serious deformity. Yearling hens are usually better than pullets for breeders, as they are more mature, do not lay so many eggs during the early winter, and consequently do not reduce their vitality so much before the breeding season. The male bird chosen should be young and active. An early hatched, well-developed cockerel is usually satisfactory, though a good, vigorous yearling or 2-year-old cock may be chosen. The hens used for breeding should be given plenty of green feed and

the best care possible; they should have large runs and should not be forced for heavy egg production during the early winter.

#### NUMBER OF FEMALES TO ONE MALE

Of the light, active breeds, such as the Leghorns and Minorcas, 1 male is sufficient for a pen of 12 or 15 females. In the case of medium-sized fowls, such as the Plymouth Rocks and Wyandottes, 1 male should be provided for every 10 or 12 females. With the heaviest breeds, like the Brahmas and Jersey Black Giants, 1 male



FIG. 7.—Jersey Black Giant, female. This breed is excellent for the production of table poultry

should be mated with not more than 10 females. Where 20 or 30 females are kept in one flock, keep 2 male birds, allowing one of them to run with the hens one day and the other the next day. A coop or extra pen should be used to confine the one not with the hens.

#### INCUBATION AND BROODING

##### HATCHING CHICKS

There are two methods of hatching and brooding chicks—the natural, in which the chicks are hatched and brooded by hens, and

the artificial, in which they are hatched in incubators and brooded in houses or in separate outdoor brooders. For a small flock the natural method is the easier and less expensive. For a larger number of hens and the raising of large numbers of chicks, and for the nonsitting varieties, the artificial method is the more practicable. There is also the added advantage with the latter method of being able to hatch chickens at any time.

#### EGGS FOR HATCHING

The eggs intended to be incubated should be kept at a rather cool temperature—50° to 60° F. It is not advisable to keep them longer than two weeks before being incubated, and the fresher they are when set the better the chances of a good hatch and strong chicks. Only well-formed eggs with good, strong shells should be set.



FIG. 8.—Rose-Comb Black Bantam, male.  
A popular breed with many city people

#### NATURAL INCUBATION

The number of eggs to the hen depends on the season, the size of the hen, and the size of the eggs. The usual number for an average-sized hen in the spring is 13. It is better to give less than she can cover than to give more, for when too many are given some of the eggs are liable to be chilled.

The quarters for sitting hens should be comfortable and convenient. The hens should be free from disturbance and should have a small yard or run. The nest should be built carefully with straw, fine hay, or leaves (fig. 12).

It should be of such size and shape that the hen will fill it nicely, affording complete protection for a single layer of eggs. If the nest is too deep the eggs may pile up and some become broken. The nest should be placed in such a position that the hen will not have to fly up to or jump into it. A box about 18 inches square and 4 inches high, on the floor makes a good nest. Straw should be placed around the box on the outside so that at hatching time, if any of the chicks should leave the nest they can get back into it readily. The hen should be dusted with a good insect powder. When a hen is not to sit in the nest in which she has been laying, it is best that she be moved after dark, for most hens will then settle down more quietly in their new quarters than if moved during the day.

#### FEEDING SITTING HENS

Sitting hens should be well fed. Grain should be left where they can get it whenever they desire to come off the nest. Their feed should consist mostly of a variety of whole grain, such as corn, wheat, and oats. Very little vegetable or meat should be given, for

too much vegetable feed tends to loosen the bowels, and too much meat tends to stimulate a desire to quit sitting and begin laying.

#### TAKING CHICKS FROM NEST

Chicks should be removed from the nest about 24 hours after they are hatched. By the time they are a day old they want to get out from under the hen and move about, which is liable to make the hen restless and often causes her to leave the nest.

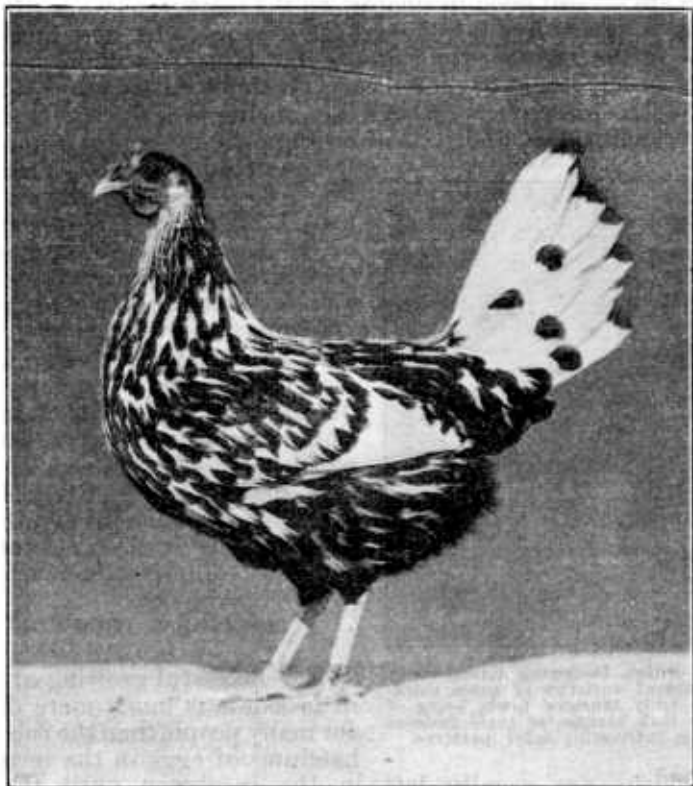


FIG. 9.—Silver-Spangled Hamburg, female. The striking black and white color pattern makes this variety very attractive

#### NUMBER OF CHICKS TO A HEN

If the weather is cold, 10 or 12 chicks are enough for one hen. As the weather becomes warmer a few more may be given, but it is seldom advisable to give more than 15. The best place for the young chickens is a yard which furnishes an abundance of shade and also admits plenty of sunlight.

#### COOPS FOR HENS AND CHICKENS

The simplest coop is the common A-shaped coop which is quickly and easily made. A floor is desirable, except during warm weather and where the soil drains quickly.

Another good coop is the box coop (fig. 13), which in some respects is preferable to the A-shaped coop, for in the latter the hen can stand upright only near the middle of the coop. The box coop is also more easily cleaned. A small, covered run can be made for each coop, and this is especially desirable if there is danger of losses from cats, hawks, or similar pests.

#### ARTIFICIAL INCUBATION

There are several good incubators on the market, any one of which, if properly handled, will be found satisfactory. In most cases, more depends on the operator than on the incubator. In buying an incubator the order should be placed early, without waiting until the purchaser wishes to begin operating it. Spring is a busy time for the incubator companies, and it is often impossible for them, no matter

how well equipped they may be, to fill orders the day they are received. Then, too, shipments are often delayed by the transportation companies. Also it is advisable for every beginner to have his machine some time before he desires to fill it with eggs, so that he may become fully acquainted with its operation. A book of instructions accompanies every incubator, which makes it unnecessary to go into details here. Probably the most common cause of failure with incubators is carelessness and neglect in attending to the machines.



FIG. 10.—Silver Duckwing Game, male. The different varieties of game chickens are truly fanciers' fowls, being of interest both because of their unusual type and interesting color patterns.

#### ARTIFICIAL BROODING

The successful growing of chicks in brooders is much more difficult for many people than the successful hatching of eggs in the incubator.

The chicks are usually left in the incubator until they are from 24 to 36 hours old, when they are placed in the brooder, which should have a temperature of about 95° F. (fig. 14). This temperature should be gradually reduced until about 80° F. is reached, when the chicks are about 4 or 5 weeks old. However, the temperature after the first day or two should be governed largely by the action of the chicks and not by the thermometer. Crowding of the chicks to the outside of the brooder, panting, or breathing hard indicate too much heat; on the other hand, crowding and huddling about the heater indicate the need of more heat. When they spread out comfortably at night between the heater and brooder walls, or just inside the fringe, where a hover is used, it is a safe indication of the right amount of heat. Chicks must be kept warm while at rest and should always have a warm place ready for them to run to when they feel chilly. They should not be allowed to huddle together outside

the brooder, but should be placed inside until they learn to go there of their own accord.

Pure, fresh air is as essential as heat. The most common way of supplying this air is in connection with the heating system, with a constant circulation of warm air coming in around the heater.

Cleanliness is essential and brooders should be cleaned and aired every day, if possible, and the floors sprinkled with sand or similar material to absorb the droppings. The water fountains or dishes and the troughs used for mashes should be kept perfectly clean.



FIG. 11.—White-Crested Black Polish, female. The several varieties of Polish are kept largely because of their ornamental qualities

Incubator chicks at first are generally free from lice, but during warm weather lice are apt to find their way to the brooder, and it is well to keep a sharp lookout for them.

The chicks should be allowed to use the brooder until they are from 6 to 8 weeks of age, depending largely on weather conditions and the development of the chicks, when the brooder stoves may be removed.

#### FEEDING THE CHICKS

The first rule for getting a good profit from poultry is to hatch the chicks early, and the next is to keep them growing so that they

will reach laying maturity before the beginning of cold weather. There is no profit in keeping a chicken just alive, whether it is intended for laying stock or for the market. So far as possible young chickens should be raised apart from the old stock; otherwise the chicks are liable to contract disease from contaminated soil or will become infested with worms.

The chicks should be fed from three to five times daily, depending upon one's experience in feeding. More harm can be done to the young chickens by overfeeding than by underfeeding. At no time should they have more feed than barely enough to satisfy their appetites and to keep them exercising, except at the evening meal, when they should be given all they will eat. Greater care must be



FIG. 12.—A very simple arrangement of nests for sitting hens. The door in front is shown open, but can be closed to keep hens on the nests

taken not to overfeed young chicks that are confined than those that have free range, as leg weakness may result in those confined.

The young chicks should not be fed until they are from 36 to 48 hours old, whether they are with the hen or in a brooder. A suitable first feed consists of a mixture of rolled oats, corn meal, bran, and middlings in equal parts, to which should be added meat scrap to make 10 per cent of the mixture. This combination of feeds may be used with good results for the first week. Then there should be gradually substituted daily, for one or two feeds, a mixture of equal parts of finely cracked wheat, cracked corn, and pinhead oatmeal or hulled oats, to which may be added a small quantity of broken rice, millet, or rapeseed, or all combined, and charcoal if obtainable. This mixture makes a very good ration. A commercial chick feed which contains a variety of grains may be fed instead, if desired, and can be bought from almost any feed dealer.

In the case of chicks hatched early in the season and when they have not much access to the direct rays of the sun or can not get much green food, they frequently soon show signs of leg weakness. A practical method of avoiding this condition is to give a tested brand of cod-liver oil with the mash. The proper quantity of cod-liver oil to use is about 2 per cent of the mash ration. Do not mix up more mash with cod-liver oil than will be consumed in about two weeks, since the oil appears to lose some of its value after being exposed to the air. The oil kept on hand for future use should be kept in tightly stoppered bottles or cans.



FIG. 13.—Well-made brood coops for confining the mother hens

When the chicks are from 10 days to 2 weeks old, use a dry mash for growth composed of the following:

Parts, by weight		Parts, by weight	
Yellow corn meal-----	4	Sifted meat scrap-----	½
Rolled oats-----	2	Dried milk-----	½
Bran-----	2	Bone meal-----	½
Middlings-----	2		

This mash may be placed in a hopper where it will not be wasted and left before the chicks at all times, or it may be fed as a moist, crumbly mash once daily, feeding suitable chick grains three times a day.

With only a few chickens it is less trouble to purchase the prepared chick feeds, but if a considerable number are reared it is sometimes cheaper to buy the finely cracked grains and mix them.

When the chickens are about 8 weeks old, reduce the rolled oats to one part.

As soon as the chickens will eat whole wheat, cracked corn, and other grains, the small-sized chick feed can be eliminated and the chicks fed only twice a day. Growth can be hastened if they are given sour milk, skim milk, or buttermilk to drink in addition to the feeds, or mixed with the mash.



Chickens confined to small yards should always be supplied with green feed, such as lettuce, sprouted oats, alfalfa, or clover; but the best place to raise chickens successfully is on a good range where no extra green feed is required. Fine charcoal, grit, and oyster shell should be kept before the chickens at all times, and cracked or ground bone may be fed in small, bare yards but is not necessary for chickens that have a good range.

For more complete information on the subjects of incubation, brooding, and feeding chicks, write for the department's bulletins on these subjects.

#### RAISING BANTAMS

As miniatures of the various breeds and varieties of poultry, bantams are kept by many to whom the type appeals and who take

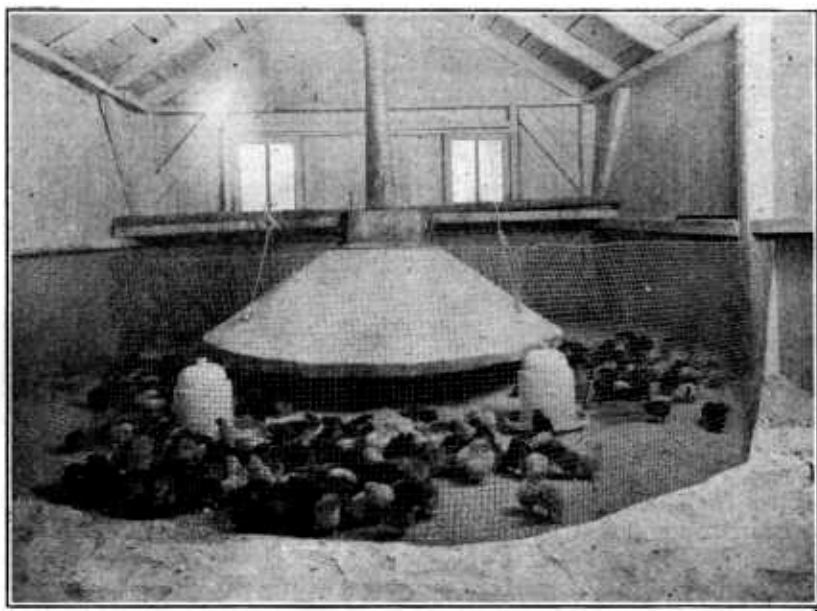


FIG. 14.—A coal-stove brooder with a brood of chicks. This type of brooder is well adapted for brooding chicks in flocks of from 150 to 500

pleasure in working out the breeding problem that it presents. The development of various color patterns is also an incentive in bantam breeding. Their small size and gracefulness appeal to many persons, and they are frequently kept as children's pets.

#### UTILITY VALUES

From the standpoint of utility, bantams require only small coops for protection, consume much less feed than birds of normal size, but usually they lay fewer eggs, and the eggs are smaller. Bantams can be kept under rather confined conditions and are easily handled. Because of this it is frequently possible to interest children in an enterprise which will develop a real liking for poultry and real interest in breeding problems. The fundamental principles of good

poultry keeping can be learned in raising bantams just as well as with larger chickens. While it is true that the majority of bantams do not lay very well, egg production can be developed considerably by proper methods of breeding and selection, and the egg supply as well as dressed bantams will serve an important place in the food requirements of the family. Also it is frequently possible to sell hatching eggs and breeding stock to advantage. Poultry shows offer a good opportunity for exhibiting bantams.

Adult bantams consume from about 20 to 25 pounds of grain feed in a year. Their eggs vary in size from about 12 to 18 ounces per dozen. The bantams themselves vary in size considerably, although usually the smaller they are bred the better. Other things being equal, such as the vigor and type of birds to be selected for breeding purposes, the smaller birds should always be selected, as bantams have a natural tendency to increase in size.

#### HOUSES AND RUNS

Bantams require small houses and can be kept in relatively small runs. A few types of houses are illustrated and discussed here as being suitable for use in back yards. The house shown in Figure 15 is a good type for bantams. It is small enough to be picked up by the handles and moved, together with the attached run, to fresh ground. This house is 3 feet 10 inches wide by 4 feet 6 inches deep. It is 5 feet 6 inches high in front and 4 feet 5 inches high in the rear. The attached covered run is 3 feet 10 inches wide, the same as the house, and is 5 feet deep. The front of the run is 2 feet 8 inches high and where attached to the house is 3 feet high. Such a house and run will accommodate to advantage from 6 to 10 bantam hens and a male bird.



Fig. 15.—Convenient, movable bantam house with covered run attached

Figure 16 shows a larger bantam house divided into various pens or compartments in which different matings can be kept. Small yards are built in front of this house. The house itself is 4 feet 10 inches high in front and 3 feet 11 inches high in the rear. Each pen is 4 feet wide and 6 feet 4 inches deep. The run in front of each house is 6 feet deep. Each of these pens or compartments will easily accommodate 10 females and a male.

In Figure 17 is shown a type of house especially suited for back yards. It is built low, and the roof, both on the house and on the attached run, is necessarily hinged so that the work can be done from outside. Such a house is very suitable for bantams and is economical in construction.

#### HOUSES FOR LAYING STOCK

The poultry house should be comfortable, light, dry, with a good supply of fresh air, but free from drafts. The location of the

house should be dry. If the ground is wet or damp, it should be well drained. This may be done by putting in tile drains or open ditches. The house should face south and part of the south side should be left open, to be covered with cotton curtains in cold

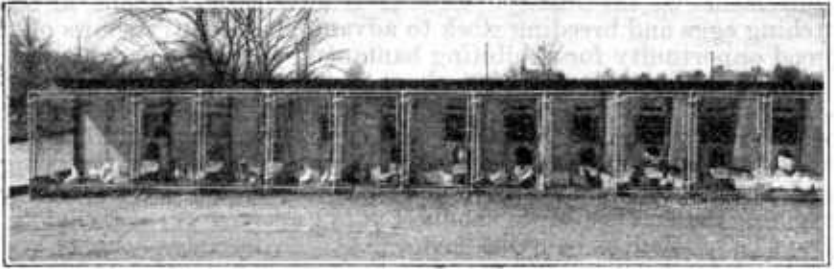


FIG. 16.—Large bantam house divided into pens for different matings

weather only. This provides for ventilation and for the sunlight to enter directly into the house, this latter feature being very important in tending to keep the birds in better health during the winter season.

Usually it is possible to locate the house so that it will be protected from the prevailing winds. If this is not possible, then per-

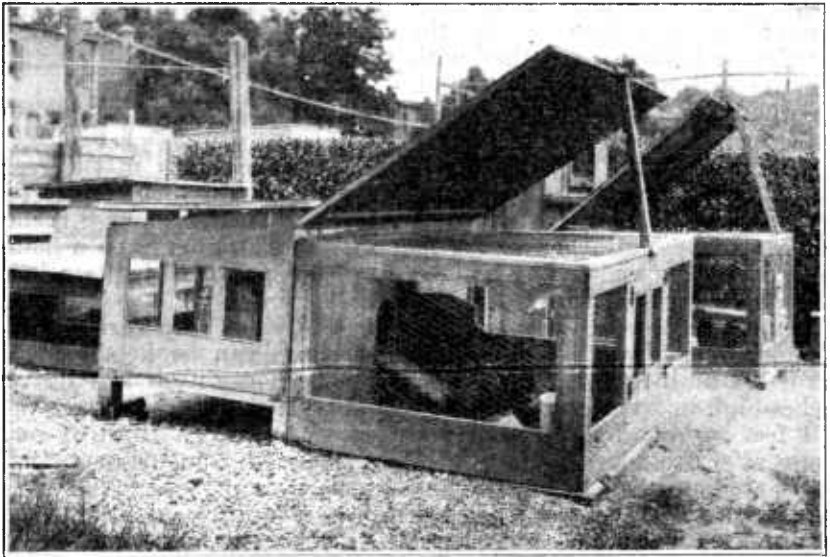


FIG. 17.—A good bantam house for use in a city back yard

haps a row of trees can be planted to the north and west of the house so that it will be protected from the more severe storms. This is advisable at least in the Northern States where the winds are sometimes very severe.

## SIZE OF HOUSE

The size of the house, naturally, will be determined by the number of birds to be kept. A safe working rule is to allow about 4 square feet of floor space per bird. The lighter birds, such as the Leghorns and Anconas, will usually do with a little less floor space than such breeds as the Plymouth Rocks, Rhode Island Reds, and Wyandottes.

## TYPE OF HOUSE

It can not be said that any particular type of poultry house is the best, since local conditions determine to a large degree the exact type that will give good results. The poultry departments of the State colleges of agriculture are prepared to make recommendations as

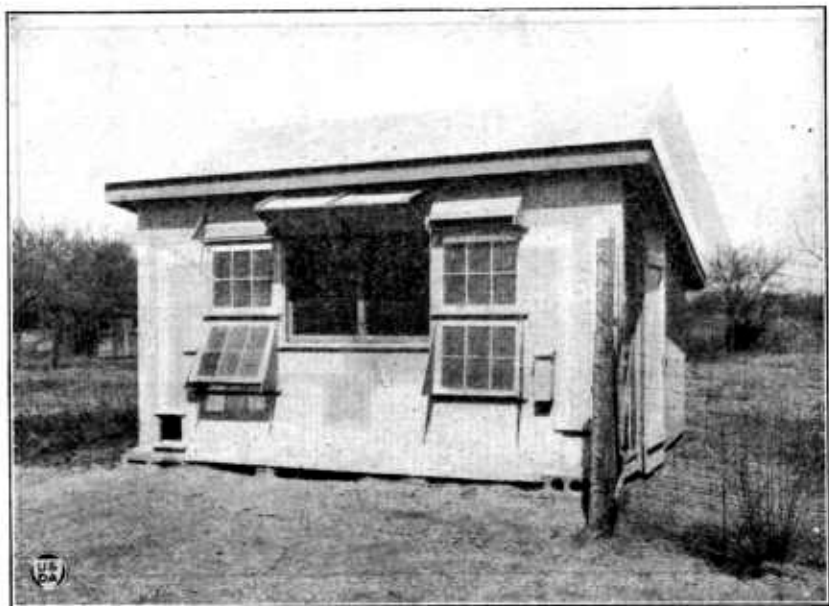


FIG. 18.—Good type of simple shed-roof house for a moderate-sized poultry flock in the suburbs. The dimensions are 10 feet long by 12 feet deep, 7 feet high in front, and 5 feet high in the rear.

to the most suitable type of house for any locality in each State. At the same time, there are general principles which apply in all cases.

For all practical purposes either a square or rectangular house is more satisfactory than other shapes. From the standpoint of the comfort of the birds it does not need to be more than 3 or 4 feet high, but from the standpoint of convenience in looking after the flock it must be high enough for the attendant to work in conveniently. It should be about 6 feet high in front and at least  $4\frac{1}{2}$  to 5 feet high at the back. The depth of the house is a matter of importance, because the deeper the house the less possibility of drafts reaching the birds when they are roosting at the rear. A depth of at least 10 feet is desirable both from the standpoint of winter and summer comfort. Ordinarily, a shed-roof type of house is the most economical to build. (Fig. 18.) The shape of the roof

influences the cost of construction. The steeper the pitch the greater the cost of the building, but the steeper roof will last longer. Most roofs are one-fourth pitch, but shingle roofs should be one-third pitch.

#### KIND OF FLOOR

An earth floor for the poultry house is sometimes satisfactory where the soil is light in texture and well drained. The principal objection to earth floors is that they make the house very dirty and rats frequently burrow in them. A board floor is preferable to an earth floor, although this may serve to harbor rats and other vermin. If a board floor is used it should be raised about 8 or 10 inches off the ground. All things considered, a concrete floor is the most satisfactory, since it is more sanitary and durable than any other kind.



FIG. 19.—A gable-roof type of house with ample provision for sunlight and fresh air. The dimensions are 10 feet long by 12 feet deep, 6 feet high in front, 9 feet high at the peak, and  $4\frac{1}{2}$  feet high at the rear.

On the other hand, a board floor has the advantage over a concrete floor in that the house can be moved to a new location on fresh soil.

#### FLOOR LITTER

The floor of the poultry house should be kept well littered, for which purpose clean wheat or oat straw is the best material. It should be about 4 inches deep to provide scratching material in which the birds seek their scratch ration. Whenever the litter gets damp and dirty it should be renewed, since a dirty floor and damp litter cause a decrease in egg production.

#### ROOSTS

The roosts should be located at the rear of the house, away from the front openings. They should be placed about  $2\frac{1}{2}$  feet above the

floor, and should have a droppings board constructed under them for the purpose of catching the droppings which should be removed frequently. The roosts should be made of 2 by 4 inch, or 2 by 2 inch pieces, with the corners slightly rounded. The location is indicated in Figure 21. Leghorns require about 8 inches perch room per bird; Plymouth Rocks and similar breeds, and Brahmas, 10 inches.

#### DROPPINGS BOARDS

The droppings board should be about 6 or 8 inches beneath the roosts and should be 20 inches wide for one roost and 3 feet wide for

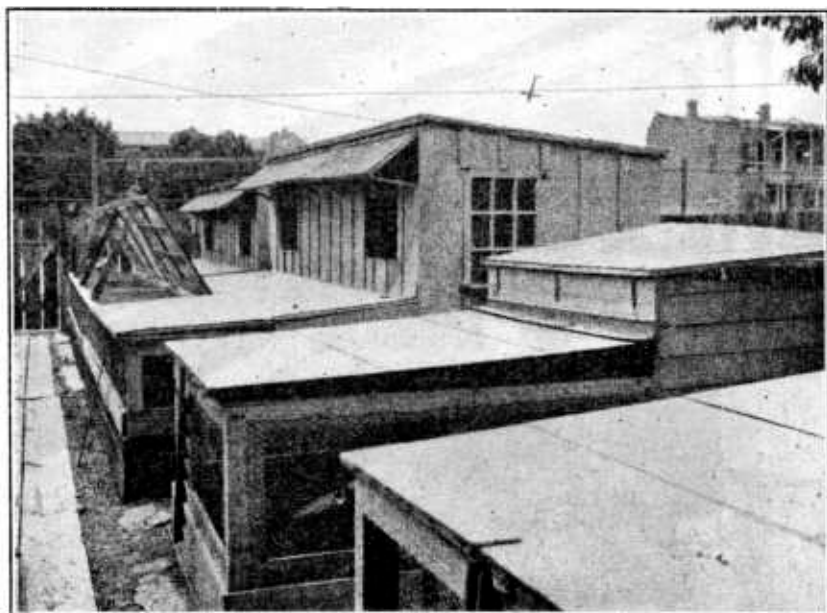


FIG. 20.—An intensive back-yard poultry plant. Practically the entire back yard is occupied by houses and covered runs, and about 70 hens are carried. In addition, chickens are raised here. Each house is 6 by 14 feet, divided into two pens, with a covered yard of the same size. Each pen carries about 15 hens. The houses are raised from the ground so that the hens can run under them. The soil in the runs is renewed four times a year. A flock of 13 hens in one of these pens laid 2,163 eggs in a year. Oats are sprouted in the cellar of the dwelling house for green feed

two. The board should be made of matched lumber and well constructed. It should be cleaned at least twice a week. The manure may be used as fertilizer for the flower or vegetable garden or put around trees, but should never be thrown on the ground over which the poultry ranges.

#### NESTS

The nests should be located in convenient places in the house, and it is advisable to arrange them so that the birds enter at the rear, the fronts being kept closed. Such darkened nests tend to prevent the bad habit of egg eating. Provide a nest for about every four hens in the flock.

**BROODY COOP**

It is desirable to have a broody coop located in a convenient place so that whenever a laying hen becomes broody she may be "broken up" as quickly as possible. One of these is shown in Figure 22 and is simply a wire-front coop with a slat bottom so that the hen is not inclined to sit down and cool air will circulate freely around her body. As soon as the layer is observed remaining on the nest overnight and clucks as she is approached she should be put in the broody coop and fed and watered well. The sooner she is "broken up" from her broodiness the sooner she will lay again.

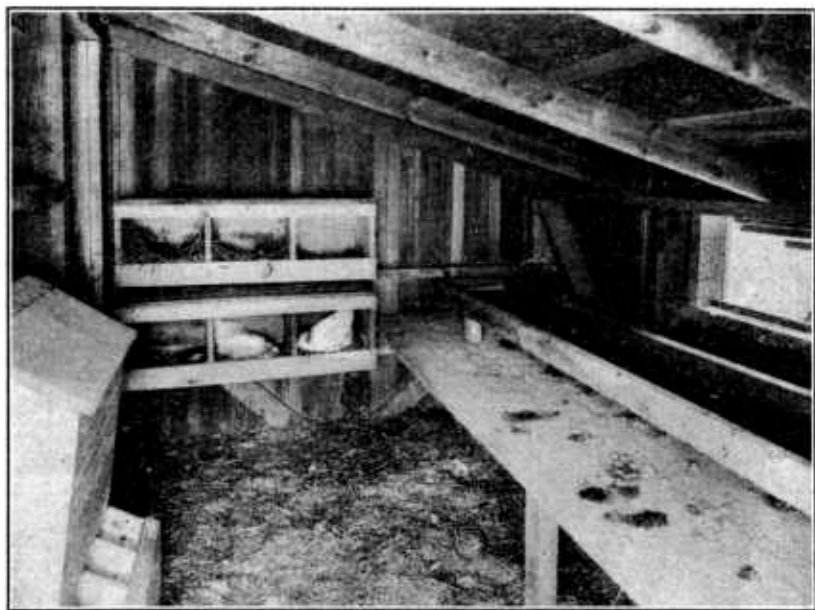


FIG. 21.—The interior arrangements of a laying house. The roosts are placed 6 inches above the droppings board. Note the window in the rear for ventilation in hot weather. The self-feeding hopper at the left is for dry mash, oyster shells, and grit. The nests shown are open in front, but would be better if arranged so that the hens could enter from the rear of the nests, with a door placed in front for collecting the eggs.

**DRY-MASH HOPPER**

A self-feeding hopper so constructed and located in the laying house that the hens can help themselves to dry mash at any time is necessary for best results in egg production. One of these is shown in Figure 23, and this as well as other types can be purchased in almost any poultry-supply house or a homemade hopper can be made very easily. Two important features of such a hopper are that it makes the dry mash easily accessible and at the same time does not waste any.

**GRIT AND OYSTER-SHELL HOPPERS**

Self-feeding hoppers for grit and oyster shell should be located in such places in the laying house that the hens have access to these

important parts of the ration at all times. For suitable types see Figure 23.

#### WATER PAN

One of the most important parts of the hen's ration is the water she consumes from day to day. A good-sized galvanized-iron water pan or pail is all that is necessary to hold the water supply, but it should be located about 18 inches above the floor, as shown in Figure 24, in order that straw and dirt may not get into the water. The pan should be easy to empty and clean and should be protected so that the birds can not get into the water.

#### YARDS FOR LAYING STOCK

Laying hens may be kept indoors practically the year round, but with the average poultry keeper they will probably keep in better

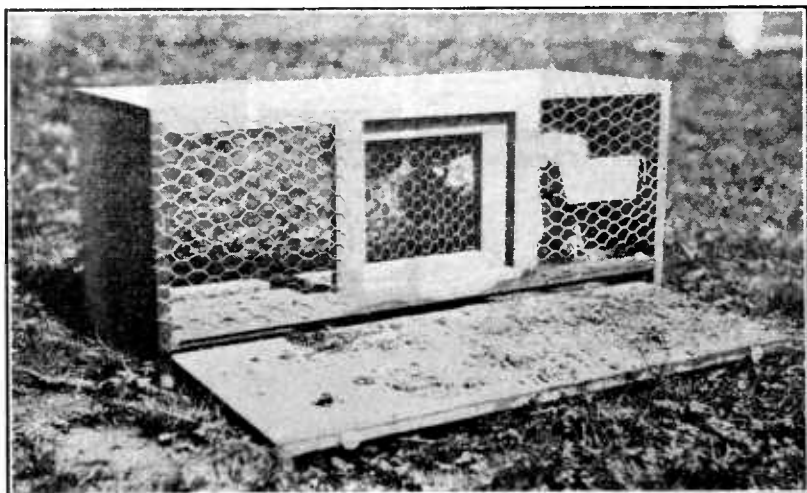


FIG. 22.—A broody coop with a slat bottom and wire front

physical condition where they are allowed a certain amount of exercise in the yard adjoining the house. The yard should be inclosed by a wire fence, and the runs for young chickens should be so constructed as to keep out cats and other predatory animals, as well as to keep the chickens confined. For small yards this can be accomplished readily by using 2-inch wire mesh over the top of the yard as well as around the sides. When yards are too large for this to be done economically, a 5-foot fence is high enough to prevent most breeds from flying out, although for Leghorns, Anconas, and other light breeds a higher fence would be required, and one wing of each bird would also have to be clipped. The yard should be as large as it is possible to provide for the flock because, under most conditions, there can hardly be too much yard room. In other words, the more range provided for the birds the better.

To prevent the soil from becoming contaminated, it is necessary to cultivate it occasionally and, if possible, seed it down to grass



or grains. Whenever possible, provide a double yard for the laying stock, so arranged that one yard can be growing a good stand of grass or crop of green food while the other is used for the chickens. It is also good practice to lime the soil occasionally.

#### FEEDING FOR EGG PRODUCTION

Laying hens should be fed a ration consisting of scratch grains and mashes, meat food, green food, mineral food, grit, and drink. The method of feeding is practically the same as for farm and commercial flocks, which is discussed in Farmers' Bulletin 1067, entitled "Feeding Hens for Egg Production." At the same time, since one object in keeping a back-yard flock is to dispose of kitchen and table waste, it is necessary to consider ways of using such material in the regular rations. This can best be done by mixing it with the mash ration which will be considered under that heading.

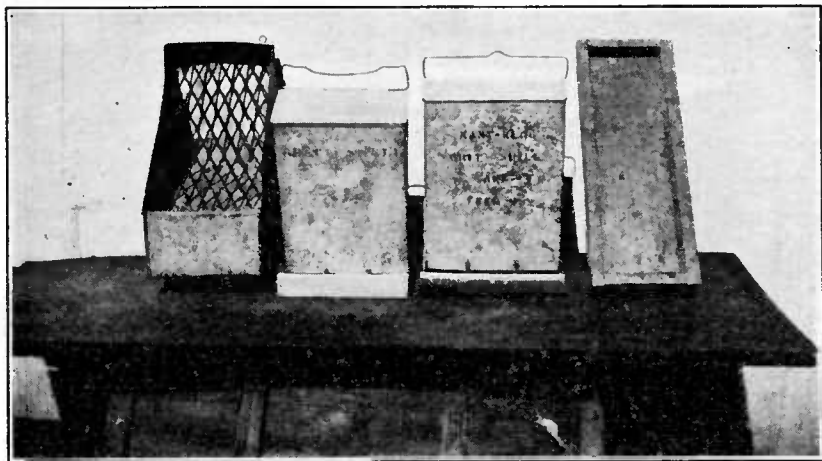


FIG. 23.—The hopper on the left is for dry mash, the two center ones are for grit and oyster shells, and the flat trough on the right is for feeding young chicks

Leghorn laying hens, and others of similar breeds, consume on the average from about 70 to 85 pounds of grain annually. Plymouth Rock laying hens, and others of similar size, consume on the average from about 80 to 95 pounds of grain annually. The number of eggs hens of the various breeds lay depends on the breed and how the fowls are managed. Under ordinary conditions, an average production of 150 eggs should be readily obtained.

#### SCRATCH RATION

A good scratch ration may be made up of 2 parts (by weight) of corn, 1 part wheat, and 1 part good, sound oats. This is a good ration for most of the year, although it could be changed to equal parts of the three grains mentioned for the warm summer months, since corn is very fattening. This scratch ration should be fed morning and evening, giving a small quantity in the litter on the floor. The morning feed should be a light one so that the hens will be kept

scratching most of the morning. The evening feed of scratch grain should be sufficient to have the birds go to roost with full crops. The litter should be about 4 inches deep and should be kept perfectly dry and clean at all times.

#### MASH RATION

The mash ration may be fed either in dry form or as a moistened mash. The latter method is preferable for the average back-yard poultry keeper, inasmuch as it provides the means of incorporating

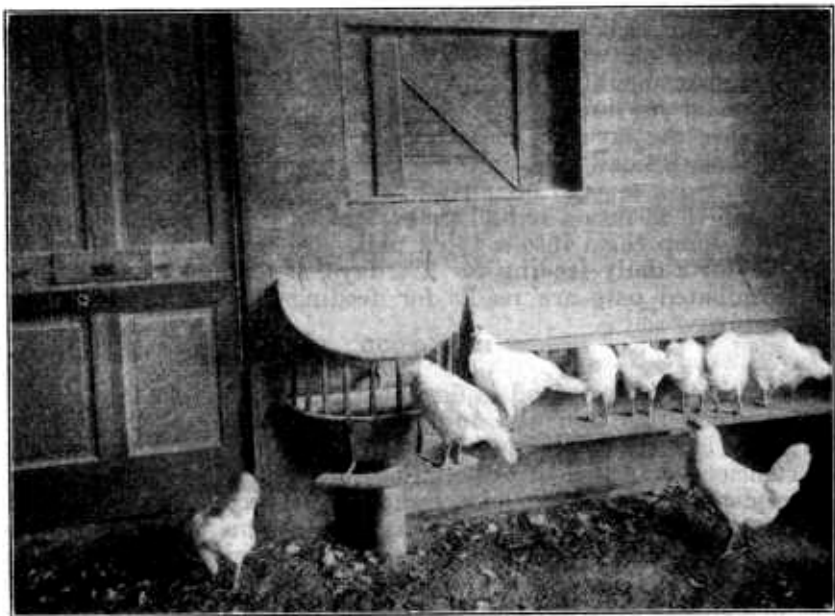


FIG. 24.—Interior of laying house, showing drinking fountain and dry-mash hopper

kitchen and table waste with the other feed. A good mash may be made up of—

	Parts, by weight		Parts, by weight
Corn meal.....	30	Fish meal.....	7
Ground oats.....	14	Dried milk.....	7
Alfalfa meal.....	10	Bone meal.....	4
Middlings.....	10	Ground limestone.....	2
Bran.....	8	Salt.....	1
Meat scrap.....	7		

The daily gatherings from the kitchen and table can be mixed with this mash moistened with water and fed in V-shaped troughs. Care should be taken not to overfeed on this moist mash; otherwise the birds will have a tendency to get too fat, especially if they have not much chance to take exercise. Also, the garbage to be fed to poultry should be kept in a fresh condition and free from any highly flavored materials.

Instead of using the scratch and mash rations previously suggested many back-yard poultry keepers use commercial scratch and mash rations, of which there are a number of good ones on the market.

#### GREEN FEED

Green feed should be made available at all times and can be provided in the form of lawn clippings, cabbage, lettuce, or other greens from the garden. Care should be taken, however, not to feed onion tops, geranium leaves, or highly flavored feeds of any kind; otherwise the flavor of the eggs is very liable to be affected. A liberal supply of green feed daily provides the chickens with the required quantity of succulence in the ration and tends to keep them in better physical condition.

Although it should be possible to store cabbage and other green-feed material for use during the winter months, it would also be well to give the layers a daily supply of sprouted oats. Pails or small tubs with small holes in the bottoms are excellent for sprouting purposes. Soak a small quantity of oats in a pail for 24 hours and then dump them into a second pail. Moisten them slightly and the next day dump them into a third pail. Do this with each supply required for a daily feeding for five days, at the end of which time the germinated oats are ready for feeding if kept at a suitable temperature.

#### MEAT FOOD

Some kind of meat food is desirable in order to get best results in egg production and also to keep the birds in good condition. Meat food is necessary because most of the staple grains do not contain sufficient quantities of protein to supply the hen with her normal requirements. For this reason meat scraps are generally used in the dry or wet mash rations. Where milk in some form is available or can be purchased economically, it should be given daily, because it serves an excellent purpose in providing the birds with a certain amount of their protein requirements. It will not entirely take the place of meat scraps or other similar meat foods but is good largely as a supplement to the regular diet.

#### MINERAL FOOD

Birds need more mineral food in proportion to their total food requirements than most other classes of animals. This is primarily because the eggshell is largely composed of mineral matter in the form of calcium, and also because the skeleton of the bird requires considerable proportions of various kinds of minerals to keep it in repair. Mineral food is best supplied in the form of oyster or clam shells, or limestone, which supply the calcium for eggshell formation. Bone meal may also be used to advantage, especially to supply the phosphates, and is usually mixed in with the mash ration.

#### GRIT

The food consumed by chickens is ground in the gizzard, and in order to be ground most efficiently there should be present pieces of grit or small pieces of gravel. This can easily be provided by buy-

ing one of the different brands of grit on the market or by providing the birds with quantities of gravel.

#### WATER AND MILK

Fresh water should be supplied every day, and the water fountain should be kept clean and sanitary. Milk is also an excellent drink for chickens and besides providing some protein, as mentioned before, it also supplies minerals, a certain amount of lactic acid, and has proved to be one of the best poultry feeds available. So far as is known, there is practically no substitute for milk in some form or other, and its use is advised wherever it can be purchased economically. The various ways in which milk can be fed include sour skim milk, semisolid, dried skim milk, and dried buttermilk.

#### GROWING CAPONS

A capon is a castrated male chicken. His disposition differs materially from that of the cockerel, since he no longer shows any disposition to fight and is easier to keep within bounds. The capon seldom crows and in this respect is particularly well suited for keeping in the back yard. After castration the comb and wattles cease growing, which causes the head to appear small. The hackle and saddle feathers develop to considerable length.

There are many residents in villages, towns, and cities who do the operation of caponizing on the surplus males which are raised in their flocks. Others purchase young capons and feed them on waste material until they are ready for table purposes. The details of the operation of caponizing are given in Farmer's Bulletin 849, which is devoted entirely to that subject and will not be repeated here. Usually the time to operate is as soon as the cockerel weighs from 1½ to 2½ pounds, or when from 2 to 3 months old. Males of the Brahma and Jersey Black Giant breeds make excellent capons, and so do males of the American breeds, although they usually do not attain so large a size. A few capons will go a long way toward supplying the meat requirements of the average family, and capon meat can be produced very cheaply if there are table scraps and kitchen waste as well as feed to be obtained from the garden.

The feeding of the capons can be carried on in much the same way as the laying hens; in fact, the same mash will do while the capons are in the growing stage. When they are maturing, which takes place usually at 6 to 9 months old, they should be fattened for two or three weeks before being killed.

A good fattening ration is as follows:

	Pounds
Corn meal.....	60
Crushed oats, with hulls sifted out.....	15
Middlings.....	15
Meat scrap.....	10

This mash mixture should be fed three times daily, taking care to keep the troughs sweet and clean between feedings.

#### PROBLEMS OF MANAGEMENT

Since the average back yard is not large enough to allow growing chicks or laying hens more than a limited range, greater care

must be taken to keep the stock in good condition than is the case with farm flocks. Every effort should be made to give the birds plenty of exercise in scratching for part of their daily ration, and green feed should be supplied regularly.

#### USE OF ARTIFICIAL LIGHT

Practical experience has demonstrated that the use of artificial light in laying houses during the winter months induces the hens to consume more feed and thus lay more eggs. The use of artificial light does not increase the annual production of eggs as much as it increases the proportion of eggs laid during the fall and winter months, when egg prices are relatively the highest. An excessive use of artificial light is harmful, particularly in the case of breeding stock. Where artificial light is used judiciously the layers can be kept in better physical condition than when it is not used. The lights may be used from about the first of November to the latter part of March.

The lights are usually turned on at 4.30 a. m. and kept on until daylight, being turned off by the poultry man when he feeds the fowls in the morning. Some poultry men use lights in the morning and evening, usually having the lights on approximately one hour at each time. Whether lights are used in the morning only or during the morning and evening, they should not be kept on for a longer time than will give the laying stock from about 12 to 13 hours of working time. Again, if lights are used in the evening a special dimming device is necessary so that when the bright lights are turned off light enough may be left to allow the hens to see the roosts. Another method is to use the lights for one hour during the evening, frequently from 8 to 9 o'clock or from 9 to 10 o'clock. The birds are fed at this time and thus get an extra feed every day. With this method a dimming system must also be used.

#### CULLING THE HENS

The laying and breeding quality of the flock can be improved considerably by frequent culling. In the fall of the year after laying has commenced, the hens which bleach the yellow out of their beaks and shanks the soonest are usually the best layers. Also, hens which lay most persistently have the whitest beaks and shanks. In the spring of the year the hens that go broody most frequently will have more yellow come back into their beaks and shanks. Then in the following summer and fall the poor layers will usually molt earliest. By observing the members of the flock carefully, the poor layers can be culled out from time to time and only the best ones kept over the second year for breeding purposes. A cheap, practical way of distinguishing the good from the poor layers is to mark them with celluloid leg bands of different colors.

#### REMOVING SICK BIRDS

Laying and breeding stock that is not only healthy but also possesses abundance of constitutional vigor is the only kind that should be kept. The removal of birds from the flock at the first indication of a debilitated condition or sickness is a necessary precaution against

loss. In case of an apparent outbreak of disease, consult a qualified veterinarian or pathologist or send affected specimens with a complete description of the symptoms to your State agricultural college or the State livestock sanitary authorities. The department has published a bulletin on poultry diseases (Farmers' Bulletin 1337), which can be obtained on application.

Since the welfare of the healthy members of the flock is of far greater importance than that of a few sick birds, it is well to look after the healthy birds first. The thing to do after the sick birds are culled out of the flock is to clean out and disinfect the poultry house, spray with disinfecting solution any possibly contaminated parts of the poultry establishment, and cleanse thoroughly all feeding and drinking utensils.



FIG. 25.—Pinch method of applying sodium flouride to a fowl infested with lice

If treatment of sick birds is advisable, keep them confined while being treated. Quarantine birds suffering from contagious disease until all danger of contaminating the rest of the flock is passed. In many cases, in an outbreak of disease, it is better to kill the affected birds at once and burn them or bury them deeply. In no case should diseased or exposed birds be fed to other animals or sold.

#### CONTROLLING DISEASES, LICE, AND MITES

Sanitation is a very important factor in keeping down disease and lice and mites in poultry flocks. Land used for poultry should be kept free from contamination by regular cultivation and the growing of grass, clover, or some other crop will help to keep the land free from contamination. Some poultrymen lime their soil annually. It is of course necessary to keep poultry houses clean at all times and

well littered with clean, dry straw. Houses, to be kept free from dampness, need good ventilation, but drafts are to be avoided. Overcrowding tends to weaken the vitality of the stock, and it is well to allow about 4 square feet of floor space per bird.

The poultry house requires thorough disinfection every few months with a 3 per cent solution of cresol compound, U. S. P., or a 5 per cent carbolic-acid solution. Disinfection will help greatly in keeping the fowls free from mites. Spray or paint the roosts and

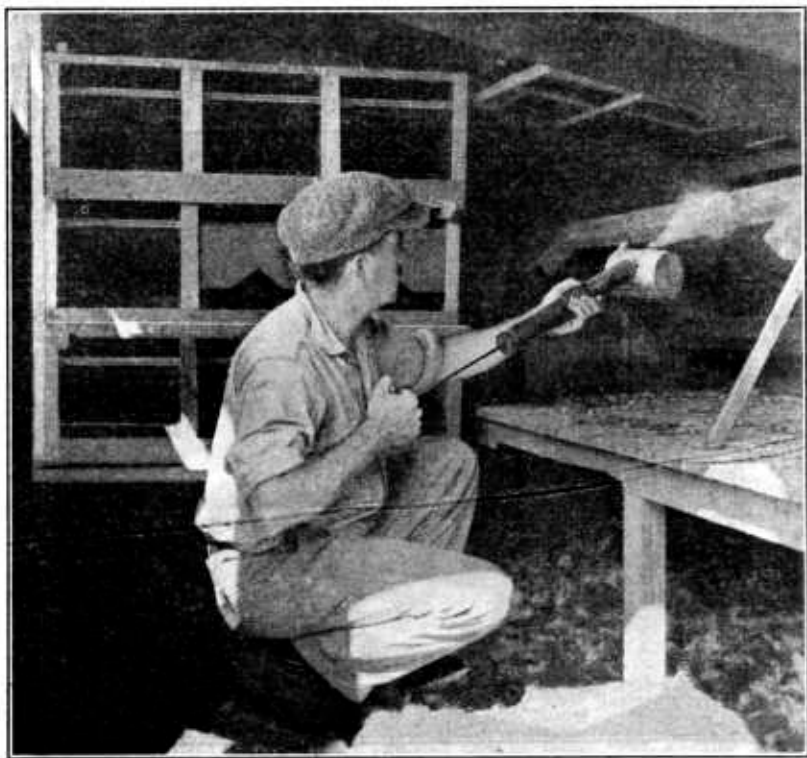


FIG. 26.—Spraying the roosting quarters regularly with a good disinfectant tends to keep the laying house and hens free from mites

roosting quarters with a good disinfectant about every two weeks during the summer and somewhat less frequently at other times of the year. It is also well to treat the birds occasionally with a good insecticide. One of the best of these is commercial sodium fluoride, and a small pinch of it should be rubbed into the feathers of the head, neck, back, breast, each thigh, below each wing, at the tail head, and under the vent (fig. 26). This is a very effective remedy in keeping the fowls rid of lice.

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October 25, 1926

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